

Claims

1. Leaf (1) for a multi-leaf collimator (2) for delimiting an irradiation device high-energy beam (3, 3', 3''), in particular, for conformation irradiation, wherein the multi-leaf collimator (2) comprises a plurality of mutually opposite leaves (1) which can be brought into the beam path (3, 3', 3'') via drives (4) such that the contour (5) of the beam path can be shaped in accordance with the volume to be irradiated, characterized in that the leaf (1) comprises radiation-absorbing material (7) of appropriate thickness (8) substantially only in that region (6) which can enter into the path (3, 3', 3'') of the high-energy beam (3) in all possible adjustment positions (9).
2. Leaf according to claim 1, characterized in that the other region (6') which does not absorb the beam consists essentially of another material (10) having a lower specific weight than the beam-absorbing material (7) and having good mechanical properties.
3. Leaf according to claim 1 or 2, characterized in that the beam-absorbing material (7) is tungsten.
4. Leaf according to claim 2 or 3, characterized in that the material (10) of the region (6') which does not absorb the beam is steel.
5. Leaf according to any one of the claims 1 through 4, characterized in that the beam-absorbing material (7) is joined to the other material (10) such that, in the front position (12) of the leaf (1), the other material (10) is still slightly outside of the outermost possible delimitation (3') of the high-energy beam (3).

6. Leaf according to any one of the claims 1 through 4, characterized in that the beam-absorbing material (7) is joined to the other material (10), thereby forming angles.
7. Leaf according to any one of the claims 1 through 6, characterized in that the beam-absorbing material (7) is introduced into a recess (13) of the further material (10) such that the beam-absorbing material (7) is surrounded by the further material (10) at three sides.
8. Leaf according to claim 7, characterized in that the leaf (1) consists essentially of a rear part (14) of the other material (10) and a front part (15) of beam-absorbing material (7), wherein two narrow, elongated parts (16, 17) are joined at the top and bottom which are designed as a guiding part (16) and as a driving part (17).
9. Leaf according to claim 2 through 8, characterized in that the narrow elongated parts (16, 17) also consist of the other material (10).
10. Leaf according to any one of the claims 1 through 8, characterized in that the materials (7, 10) are soldered together.
11. Leaf according to claim 10, characterized in that the leaf (1) is produced through separation from a block (18) which is designed like the leaves (1), but has a multiple width (19) thereof.
12. Leaf according to any one of the claims 1 through 10, characterized in that the materials (7, 10) are glued together.
13. Leaf according to any one of the claims 8 through 12, characterized in that the two narrow parts (16, 17) are joined to the other parts (14, 15) through tongue and groove joints (20).

14. Leaf according to any one of the claims 1 through 13, characterized in that the region (6') which cannot enter into the beam path (3, 3', 3'') has openings (21).
15. Multi-leaf collimator (2) for delimiting an irradiation device high-energy beam (3, 3', 3''), in particular, for conformation irradiation, comprising a plurality of mutually opposite leaves (1) which can be brought into the beam path (3, 3', 3'') via drives such that the beam contour (5) can be shaped in accordance with the volume to be irradiated, characterized in that the leaves (1) comprise a beam-absorbing material (7) of appropriate thickness (8) only in that region (6) which may enter into the beam path (3, 3', 3'') of the high-energy beams (3) for all possible adjustment positions (9).
16. Multi-leaf collimator according to claim 15, characterized in that the leaves (1) are designed in accordance with any one of the claims 1 through 14.
17. Device (22) for delimiting an irradiation device high-energy beam (3, 3', 3''), in particular, for conformation irradiation, comprising a multi-leaf collimator (2) having a plurality of mutually opposite leaves (1) which can be brought into the beam path (3, 3', 3'') via drives, such that the contour (5) of the beam can be shaped in accordance with the volume to be irradiated, and with a further shielding (23) to delimit the path (3, 3', 3'') of the high-energy beam (3), characterized in that the leaves (1) comprise beam-absorbing material (7) of appropriate thickness (8) only in that region (6) which can enter into the path (3, 3', 3'') of the high-energy beam (3) and which is not shielded by the further shielding (23) at all possible adjustment positions (9).

18. Device according to claim 17, characterized in that the further shielding (23) is disposed in front of the multi-leaf collimator (2), relative to the beam path (3, 3', 3'').
19. Device according to claim 17, characterized in that the further shielding (23) is disposed after the multi-leaf collimator (2), relative to the beam path (3, 3', 3'').
20. Device according to claim 17, 18, or 19, characterized in that the further shielding (23) is a shielding collimator (24) whose opening region can be adjusted.
21. Device according to claim 20, characterized in that the shielding collimator (24) comprises two radiation delimiting elements (25) which can be brought into different positions (26, 26').
22. Device according to claim 21, characterized in that the radiation delimiting elements (25) comprise beam-absorbing material (7) of corresponding thickness only in that region which can enter into the path (3, 3', 3'') of the high-energy beam (3) at all possible adjustment positions (27).
23. Device according to any one of the claims 17 through 22, characterized in that the dimensions of the regions (6, 6') of the leaves (1) are determined by their maximum possible mechanical adjustment motions (9).
24. Device according to any one of the claims 20 through 23, characterized in that the dimensions of the regions (6, 6') of the

leaves (1) are determined by the maximum mechanical opening (26) of the shielding collimator (24).

25. Device according to any one of the claims 17 through 22, or 24, characterized in that the dimensions of the regions (6, 6') of the leaves (1) are determined on the basis of the possible adjustment motions (9) of the leaves (1) as delimited through control technology.
26. Device according to any one of the claims 17 through 23, or 25, characterized in that the dimensions of the regions (6, 6') of the leaves (1) are determined by the adjustment motions (27) of the shielding collimator (24) as delimited through control technology.
27. Device according to any one of the claims 17 through 26, characterized in that the multi-leaf collimator (2) is designed in accordance with claim 15 or 16.
28. Irradiation device, in particular, for conformation irradiation, comprising a device (22) for delimiting a high-energy beam (3, 3', 3'') emitted by the irradiation device having a multi-leaf collimator (2) which comprises a plurality of mutually opposite leaves (1) which can be brought into the beam path (3, 3', 3'') via drives such that the contour (5) of the beam path can be shaped in accordance with the volume to be irradiated, and having a further shielding (23) for delimiting a path (3, 3', 3'') of the high-energy beam (3), characterized in that the leaves (1) comprise a beam-absorbing material (7) of appropriate thickness (8) only in that region (6) which can enter into the path (3, 3', 3'') of the high-energy beam (3) which is not shielded by the further shielding (23) for all possible adjustment positions

29. Irradiation device according to claim 28, characterized in that it comprises a device (22) in accordance with any one of the claims 17 through 27.